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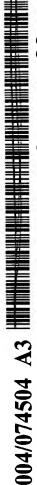
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(54) Title: FLUORESCENT SILICA-BASED NANOPARTICLES

(57) Abstract: The invention generally relates to fluorescent nanoparticles and more specifically to silica-based fluorescent nanoparticles of less than 30nm with covalently attached organic dyes. The invention provides a fluorescent monodisperse silica nanoparticle comprising fluorophore center core and a silica shell wherein the radiative properties of the nanoparticle are dependent upon the chemistry (composition) of the core and presence of the silica shell. In one aspect of the invention, the core-shell architecture provides an enhancement in fluorescence quantum efficiency. The invention generally provides control of photophysical properties of dye molecules encapsulated within silica particles with sizes down to 30 nm and below. This control is accomplished through changes in silica chemistry and particle architecture on the nanometer size scale and results in significant brightness enhancement compared to free dye.



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B. FIELDS SEARCHED			
Minimum documentation searched (classification system followed by classification symbols) U.S.: 428/403; 435/7.21; 252/301.4			
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched			
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)			
C. DOCUMENTS CONSIDERED TO BE RELEVANT			
Category *	Citation of document, with indication, where appropriate, of the relevant passages		Relevant to claim No.
Y, P	US 6,548,264 B1 (TAN et al.) 15 April 2003 (15.04.2003), entire document.		1-13
Y	US 6,479,146 B1 (CARUSO et al.) 12 November 2002 (12.11.2002), entire document.		1-13
Y	US 6,251,303 B1 (BAWENDI et al.) 26 June 2001 (26.06.2001), entire document.		1-13
Y	Y WO 99/50916 A (MASSACHUSETTS INSTITUTE OF TECHNOLOGY) 7 October 19 (07.10.1999), entire document.		1-13
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		See patent family annex.	
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